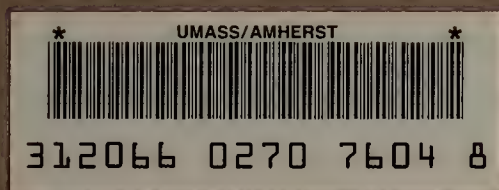


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INTERLOCAL COOPERATION:

A Feasibility Study For Sharing Fire Resources

Northborough
Shrewsbury

Westborough
West Boylston

Massachusetts Executive Office of Communities and Development

Michael S. Dukakis, Governor

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EXECUTIVE OFFICE OF COMMUNITIES & DEVELOPMENT



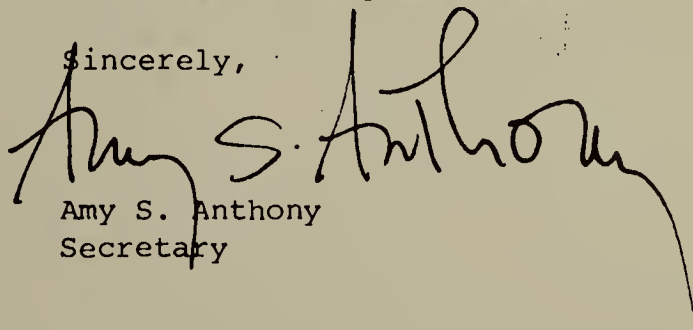
Michael S. Dukakis, Governor
Amy S. Anthony, Secretary

Dear Local Official:

I am pleased to present the feasibility study on regional service delivery for sharing fire department resources in which your community participated. This pilot program of the Executive Office of Communities and Development documented many immediate and long-term benefits of service sharing; the results are valuable to both the study participants and other cities and towns considering similar ventures. We expect that the studies will serve as a "springboard" to promote further discussions, and offer a foundation for sharing costs and services for a variety of local functions.

I want to take this opportunity to thank the local officials in your community for their cooperation and insights during the conduct of this study. I am confident that this pilot effort will serve to encourage the development of interlocal service agreements in the years ahead.

Sincerely,



Amy S. Anthony
Secretary

ASA/b

Office of the Secretary
100 Cambridge Street, Room 1404
Boston, Massachusetts 02202
(617) 727-7765

AUTHORSHIP

This feasibility study was prepared for the Executive Office of Communities and Development and the participating communities by the Field Services Division of the Massachusetts Municipal Association. The Executive Office of Communities and Development acknowledges the fine work of Brent Wilkes, Field Services Director and John P. Townley, Fire Services Consultant in conducting this study.

ACKNOWLEDGEMENTS

This report was made possible in part, because of the cooperation received by officials in each of the four towns participating in the study.

Specifically, we wish to thank the following fire chiefs and administrators:

Town of Northborough

John S. Pierce, Fire Chief
Rocco Longo, Town Administrator

Town of Shrewsbury

Andrew E. LaFlamme, Fire Chief
David W. Ramsay, Administrative Assistant

Town of West Boylston

Duncan H. Gillies, Fire Chief
Charles Hudson, Executive Secretary

Town of Westborough

James Parker, Fire Chief
Dexter P. Blois, Town Coordinator

The documentation provided by the four towns was excellent. The specific materials provided are listed in the appendices of this report.

We would also like to express our sincere thanks to Marilyn Contreas, Municipal Policy Analyst, with the Executive Office of Communities and Development. Her comments in reviewing the final draft made a valuable contribution to the project.

Brent A. Wilkes
Director, Field Services Division
Massachusetts Municipal Association

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THE UNIVERSITY OF CHICAGO

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THE UNIVERSITY OF CHICAGO

1. The University of Chicago has been established by the will of John D. Rockefeller, who died in 1900. The University was founded in 1890, and has since that time been one of the leading universities in the United States. It is located in Chicago, Illinois, and has a campus of over 1,000 acres. The University is known for its high academic standards and its commitment to research and scholarship. It has a long history of excellence in education and has produced many notable graduates. The University is a member of the Association of American Universities and is ranked among the top universities in the world.

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INTRODUCTION / EXECUTIVE SUMMARY

This study has been undertaken to explore the concept of sharing fire equipment and facilities among neighboring communities. Specifically, the objectives were:

- (1) To determine the need for specialized fire equipment for fire suppression activities in the participating communities;
- (2) To examine the costs of financing shared equipment;
- (3) To propose a financing, management/operations plan(s) for shared equipment.

The study was focused on four neighboring towns in central Massachusetts, near Worcester: Shrewsbury, Westborough, Northborough and West Boylston.

As a part of the study, the consultant team met with the participating communities, as a group and individually. A brief on-site review was conducted in each community. Data supplied by each fire department on equipment, incidents, rules and regulations was also examined. Draft findings and recommendations were reviewed with representatives of each community for their comments. This final report makes a number of findings and recommendations relative to the appropriateness and feasibility of sharing fire equipment among the four participating communities.

GENERAL FINDINGS & RECOMMENDATIONS

The consultant found the four communities to represent a reasonably typical suburban/rural service environment. The level and severity of incidents were within expected parameters. A review of major equipment showed that each town had adequate facilities and a sufficient number of apparatus. In fact, the number of pumps and ladders among the four communities was found to be more than adequate. If the fire services were operated on a regional basis, the area could probably provide more than sufficient coverage with fewer pieces of apparatus. In general, the fire departments were found to be well equipped to meet most service needs.

An analysis of the operating budgets of each department did not reveal any unusual expenditure patterns. Appropriations fell within the ranges of comparable departments within the state and nationally. Staffing patterns varied among the four departments since one was totally volunteer and the others had a mixture of career and call personnel. While the scope of the study did not permit a detailed staffing analysis, present staffing patterns did not seem disproportionately high or low.

In the course of the management review, one general priority for service improvement was identified. The towns of Shrewsbury, Northborough and Westborough are in a mutual aid arrangement with other towns, yet there is no formal agreement which outlines duties, responsibilities, practices and procedures. The development of such an agreement is strongly recommended. West Boylston, the other community in the study, is already in a formal agreement with other cities and towns in the northern section of the county.

As part of the scope of services, the consultant examined the need for specialized equipment. The equipment identified as most appropriate for consideration was a hazardous materials ("haz mat") unit and combination units (most probably trailers) for foam and large diameter hose.

In reviewing opportunities for a shared approach to specialized equipment and/or facilities, the consultant identified five opportunities which were reasonable and appropriate for the four participating towns. They were:

- (1) Joint dispatching and radio communications equipment;
- (2) Hazardous material unit;
- (3) Foam and large diameter hose units;
- (4) Fitness and training center;
- (5) Aerial platform apparatus (as a replacement to an existing ladder truck).

In addition to the above apparatus and equipment, there is also an interesting opportunity to develop a shared approach for the purchase of general supplies and materials. The report recommends that each town first undertake an inventory of all surplus parts, tools and accessories. The inventory could then be circulated among the towns. Individual departments needing a particular item could first consult the inventory list from the other towns and borrow or trade what would otherwise be purchased. For items which had to be purchased, the towns could coordinate their specifications and requests and purchase on a bulk basis to receive a better unit price. Moreover, through the development of uniform specifications, the capability of borrowing or swapping could be enhanced. General specifications for each of the five opportunities are provided in the report. It is important to note, however, that such specifications would need review and adjustments by the participating towns before acquisition was seriously considered.

The report also included general cost data where it was available. The cost data should only be used as a general guideline. The most costly of the items under consideration is clearly the aerial platform ladder. This item is also the one with the most distant target date for acquisition, (approximately ten years). The radio communication system is expensive but the ultimate cost will depend upon final adjustments in the specifications. The cost of the hazardous materials and the foam and large diameter hose units would be reasonably inexpensive since it is recommended that these units be developed on trailers rather than as independent vehicles. The training and fitness center should cost very little since existing space could be used and donations could be sought for much of the equipment.

Another major cost item to be considered would be a separate building for a joint communications center, if one were implemented. Hopefully, a reasonably inexpensive building could be erected on land already owned by one of the participating towns.

The operating and maintenance of all items except the communications center would be fairly nominal, but variable depending upon the level of utilization. The operating costs of the communications center would be more substantial but would be offset by savings in each town from their costs associated with dispatching.

The financing mechanisms available for the acquisition of equipment are not very different from those available to each town individually. The use of bonds would be more difficult on a group basis but, with modifications, could still be used. The key to the successful financing of shared equipment is in the cost allocation formula and the form of agreement into which each town would be willing to enter.

The report provides a number of options regarding cost allocation formulas and recommends one option which utilizes three variables on an equally weighted basis: population, square miles and number of incidents.

The report recommends that any shared arrangement be managed by a committee made up of each of the participating towns. The committee would establish the operating practices surrounding a particular arrangement. Such arrangements will vary significantly depending upon the item to be shared, the method of financing, and the town participating. Once arrangements are made, they should be documented in a written agreement.

There are a number of obstacles which inhibit shared arrangements, but all are surmountable. Perhaps the most difficult obstacle is a tradition of autonomy which is bound to exist with four different towns, each of which is hundreds of years old, each of which has developed its own set of practices and procedures, and its own specific way of delivering services. In this case, those within the towns will have to feel that the benefits to be derived from a shared arrangement are worth the changes in perspective which will have to occur. If agreement can be reached on the shared concept in general, then more particular consensus will be necessary regarding the items to be shared and the specifications of each.

There may be some legal obstacles to an interlocal arrangement of this sort but many of the problems can be minimized if the administrative structure is kept as simple as possible. Specifically, while equipment and personnel would be shared, the actual owner or employer should be one of the participating towns, and not the group as an entity.

CONCLUSION

The development of a shared arrangement among the four towns reviewed for fire service equipment, facilities or personnel represents a reasonable and appropriate way in which all participating towns can reduce costs and improve service delivery at the same time. The report recommends five specific areas where a shared arrangement would be most appropriate. General specifications, costs and operating standards were provided but it was difficult to be precise since the best answers are highly dependant upon a number of variables including level of interest among the towns, items to be shared and selected methods of financing. While the research undertaken produced some answers to questions asked at the onset of this study, the research generated and identified more new questions than could be answered within the scope of this effort.

The eventual success in actually implementing a shared arrangement will depend upon three specific variables. The first is the strength of interest in this issue by each of the four towns. All have expressed interest in the general concept but there seems to be less universal interest in the development of any one item to be shared. The interest within each community must exist both at the chief executive level (i.e. board of selectman, administrative officer) and the department level (i.e. fire chief).

If an adequate level of interest does exist, then the establishment of a committee to implement the shared arrangement becomes the second key variable. This committee must be composed of each town's representatives who have the support of their policy leaders to develop and produce an effective working relationship.

The committee must agree on the following:

- (1) Items to be shared;
- (2) Financing plan;
- (3) Cost allocation formula, and
- (4) Utilization procedures including maintenance and repair.

If the committee can agree on the above ingredients of a shared arrangement, then a written agreement becomes the third key variable. The document should articulate the agreements reached. It should be kept relatively simple with generous provisions for modification.

With the appropriate interest from the participating towns, the overall contents of this report should provide a useful foundation from which to build a successful arrangement to share fire equipment and apparatus.

I. THE NEED FOR SPECIALIZED FIRE EQUIPMENT FOR FIRE SUPPRESSION ACTIVITIES

A. REVIEW OF SERVICE ENVIRONMENT

A review of the general fire risk factors, service demands and special conditions revealed no specific problem areas that would unduly influence the feasibility of shared purchase of specialized fire suppression equipment nor prevent sharing of existing equipment to some degree. Responses to emergency incidents in 1983 among the four towns participating in the survey appear in Figure 1 below:

FIGURE 1

COMPARISON OF RESPONSE ACTIVITY FOR 1983

<u>TOWN</u>	<u>CALLS ANSWERED</u>	<u>CALLS PER DAY</u>
Shrewsbury	1,327	3.64
Westborough	1,241	3.40
West Boylston	390	1.07
Northborough	335	.92

(Source: TOWN ANNUAL REPORTS)

The activity ranged from a high of 3.6 incidents per day to a low of .9 incidents per day with an average of 2.26 incidents per day. The four towns are somewhat similar in department activity.

B. REVIEW OF MAJOR EQUIPMENT AND FACILITIES

The inventory of apparatus and facilities for the four fire departments appears in Figure 2 below:

<u>FIGURE 2</u>					
<u>EXISTING APPARATUS AND SPECIAL UNITS</u>					
<u>ITEM</u>	<u>SHREWSBURY</u>	<u>WESTBOROUGH</u>	<u>NORTHBOROUGH</u>	<u>WEST BOYLSTON</u>	<u>TOTAL</u>
Pumpers	3	3	3-1**	3	13
Foam Capability	1	1	1 (Mini)		3
Large Diameter Hose	0	3"	0	4"	2
Ladders	1-75'	1-85'	0	1-65'	3
Elevating Platform	0	0	0	0	0
Rescue	1 (foam)	1 (foam)	1	1	4
Brush	1	1	2	2	6
* Boat	3	1	1	1	6
* Foam Trailer	Trailer	Trailer	0	0	2
Utility Vehicle	1	1	1	0	3
* Air Resupply (portable Cascade System)	0	Auxiliary	0	Mobile Air Supply	2
<u>FACILITIES</u>					
Stations	3	1	1	1	6
*Special Units					
**Mini Pumper					

If the four towns were to decide to regionalize fire operations, there would not be a need for as many pieces of equipment as the four departments collectively now own. Because the study has been a general overview of department operations, the consultants cannot definitively say to what extent the departments are over equipped with apparatus. However, it does appear that the departments could function with up to 1/3 fewer pieces of apparatus.

For example, service delivery on a regional basis could probably be accomplished effectively with 8 rather than 13 pumpers, 2 rather than 3 ladders and 2 rather than 4 rescue trucks. If these estimates were accurate, there would be some substantial apparatus savings as indicated in Figure 3 , ESTIMATED SAVING BY CONSOLIDATING APPARATUS below:

FIGURE 3

ESTIMATED SAVINGS BY CONSOLIDATING APPARATUS
& AVOIDING FUTURE PURCHASES

<u>SURPLUS PIECES OF APPARATUS</u>	<u>ESTIMATED SAVINGS</u>
4 Pumpers @ \$130,000 each	\$520,000
1 Ladder @ \$250,000	\$250,000
2 Rescue Trucks @ \$75,000	\$150,000
Total Savings From Avoiding Future Purchase	\$920,000

C. REVIEW OF CURRENT OPERATING BUDGETS

Analyses of the four fire department budgets appear in Figures 4, 5, 6 and 7. The size of the department budgets are influenced by the proportion of call firefighters. Not surprisingly, the departments with the highest ratios of call firefighters to full time firefighters (Northborough and West Boylston) have the lowest fire department cost per capita. See Figures 4, 5, 6 and 7 on the following pages.

The four departments' budgets have been experiencing very different rates of growth. Between the fiscal years of 1980 and 1984, the average annual growth rates for the departments were as follows: Westborough (18.2%); Northborough (11.9%); Shrewsbury (7.0%); and West Boylston (5.7%).

While Shrewsbury's department growth is slowing, it maintains the highest fire department cost per capita. The per capita costs of the four for fiscal year 1984 are as follows: Shrewsbury (\$38.63); Westborough (\$28.53); Northborough (\$14.16); and West Boylston (\$11.40). Full time departments are more costly to operate than part time ones.

The two departments with the greatest concentration of full time firefighters (Shrewsbury and Westborough) have department budgets in which wages as a percentage of the total budget are the highest. A five year average for fiscal years 1980 through 1984 yield wage/department budget percentages for the departments as follows: Shrewsbury (92.8%); Westborough (90.9%); Northborough (73.5% - 3 year average); and West Boylston (66.3%).

Relating department costs to population served is only one measure of the efficiency of a fire department. Figure 8 on page 9 compares the total fire department budget for Fiscal 1983 with the response activity from Figure 1 for 1983.

FIGURE 4

SHREWSBURY FIRE DEPARTMENT
BUDGET ANALYSIS

	F.Y. 1980	F.Y. 1981	F.Y. 1982	F.Y. 1983	F.Y. 1984	F.Y. 1985
Total Department Budget (Expended)	\$685,197	\$723,616	\$743,251	\$789,791	\$875,793 (estimated) \$820,391 (appropriated)	\$881,906 (recommended by manager) \$935,980 (requested)
Salaries and Benefits	\$640,062	\$671,930	\$684,023	\$728,734	\$816,739 (estimated) \$761,337 (appropriated)	\$813,113 (recommended by manager) \$835,658 (requested)
Salaries and Benefits as Percentage of Total Department Budget	93.4%	92.9%	92.0%	92.3%	93.3% (estimated) 92.8% (appropriated)	92.2% (recommended by manager) 89.3% (requested)
Fire Department Cost/Capita (Population: 22,674)	\$30.22	\$31.91	\$ 32.78	\$34.83	\$38.63 (estimated) \$36.18 (appropriated)	\$38.90 (recommended by manager) \$41.28 (requested)

Average Annual Growth in Total Department Budget between Fiscal Years 1980 and 1984:
7.0%

SOURCE: Town of Shrewsbury Budgets

FIGURE 5

WESTBOROUGH FIRE DEPARTMENT
BUDGET ANALYSIS

	<u>F.Y. 1980</u>	<u>F.Y. 1981</u>	<u>F.Y. 1982</u>	<u>F.Y. 1983</u>	<u>F.Y. 1984</u>	<u>F.Y. 1985</u>
Total Ambulance and Fire Depart- ment Budgets	\$224,695	\$294,837	\$311,304	\$329,381	\$388,505	\$435,811
Ambulance and Fire Department Wages	\$198,930	\$262,596	\$287,760	\$307,019	\$354,259	\$411,659
Wages as a Per- centage of Total Department Budgets	88.5%	89.1%	92.4%	93.2%	91.2%	94.5%
Department Cost/ Capita (Population: 13,619)	\$ 16.50	\$ 21.65	\$ 22.86	\$ 24.19	\$ 28.53	\$ 32.00

Average Annual
Growth in Total
Department Budget
between Fiscal
Years 1980 and
1984:
18.2%

SOURCE: Westborough Fire Department Budget Trend

FIGURE 6

NORTHBOROUGH FIRE DEPARTMENT

BUDGET

	F.Y. 1980	F.Y. 1981	F.Y. 1982	F.Y. 1983	F.Y. 1984	F.Y. 1985
Total Department Budget	\$101,461 (appropriated)	Not Available	Not Available	\$127,157	\$149,606 (appropriated)	\$237,997 (requested) \$226,110 (recommended by administrative officer)
Total Salaries	\$ 76,631 (appropriated)	Not Available	Not Available	\$ 94,062	\$106,236 (appropriated)	\$184,065 (requested) 173,750 (recommended by administrative officer)
Salaries as a Percentage of Total Department Budget	75.5%	--	--	74.0%	71.0%	77.3% (requested) 76.8% (recommended by administrative officer)
Department Cost/Capita (Population: 10,568)	\$ 9.60	--	--	\$ 12.03	\$ 14.16	\$22.52 (requested) \$21.40 (recommended by administrative officer)

Average Annual Growth in Total Department Budget between Fiscal Years 1980 and 1984: 11.9%

SOURCE: Northborough Appropriation Reports; Fiscal Year 1985 Budget

FIGURE 7

WEST BOYLSTON FIRE DEPARTMENT

BUDGET

	<u>F.Y. 1980</u>	<u>F.Y. 1981</u>	<u>F.Y. 1982</u>	<u>F.Y. 1983</u>	<u>F.Y. 1984</u>	<u>F.Y. 1985</u>
Total Department Budget	\$57,652	\$55,267	\$60,563	\$61,666	\$70,720 (appropriated)	\$69,995 (appropriated)
Total Salaries and Wages	\$35,934	\$36,197	\$40,011	\$42,914	\$48,050 (appropriated)	\$50,723 (appropriated)
Salaries as a Percentage of Total Department Budget	62.3%	65.5%	66.1%	69.6%	67.9%	72.5%
Department Cost/ Capita (Population: 6,204)	\$ 9.29	\$ 8.91	\$ 9.76	\$ 9.94	\$11.40 (appropriated)	\$11.28 (appropriated)

Average Annual Growth in
Total Department Budget
between Fiscal Years
1980 and 1984: 5.7%

SOURCE: Charles Hudson; 1982-1983 Annual Town Report

FIGURE 8

FIRE DEPARTMENT COST PER CALL ANSWERED: 1983

<u>TOWN</u>	<u>TOTAL DEPARTMENT BUDGET</u>	<u>CALLS ANSWERED</u>	<u>COSTS PER CALL</u>
Shrewsbury	\$789,791	1,327	\$595
Northborough	\$127,157	335	\$380
Westborough	\$329,381	1,241	\$265
West Boylston	\$ 61,666	390	\$158
MEAN			\$350

While Shrewsbury and West Boylston have respectively the highest and lowest department cost per capita and department cost per call, Northborough and Westborough alternate for second and third position. Westborough has the second highest per capita cost (\$28.53), but the second lowest department cost per call answered.

Nationally, the four towns are comparable with cities in their population group for department cost per capita. Figure 9, TOTAL EXPENDITURES, shows the per capita cost of fire departments in cities with populations between 10,000 and 29,999 to be \$41.96.

FIGURE 9

TOTAL EXPENDITURES *

<u>Classification</u>	<u>No. of cities reporting</u>	<u>Mean (000)</u>	<u>Per Capita</u>
Total, all cities.....	1,117	\$ 2,799	\$52.51
<u>Population group</u>			
Over 1,000,000	2	145,749	69.90
500,000-1,000,000	9	36,116	51.06
250,000-499,999	23	21,327	58.97
100,000-249,999	78	8,414	56.21
50,000-99,999	150	3,478	51.14
25,000-49,999	299	1,691	48.31
10,000-24,999	576	680	41.96

* Includes total personnel expenditures, capital outlay, and all other department expenditures as of January 1, 1983

Source: THE MUNICIPAL YEAR BOOK 1984, International City Management Association, 1984.

In fiscal year 1983, the per capita costs of the four towns were as follows: Shrewsbury (\$34.83), Westborough (\$24.19), Northborough (\$12.03) and West Boylston (\$9.94).

Within the state of Massachusetts the four towns are comparable with other towns of their size regarding the balance between salaries and other expenditures on fire department budgets. Figure 10 on the following page, TOTAL PERSONNEL EXPENDITURES AS A PERCENTAGE OF TOTAL FIRE DEPARTMENT EXPENDITURES, shows a sample of Massachusetts communities within the 10,000 to 25,000 population range.

In fiscal year 1983, the percentage of salaries and benefits as a percentage of the total department budget for the four towns was the following: Shrewsbury (92%), Westborough (93%), Northborough (74%) and West Boylston (70%).

In conclusion, while the department budgets were not examined by object of expenditure detail, the comparative data shows that the costs of operations in the four towns reviewed in this study are similar to those of comparable cities and towns across the state and country.

FIGURE 10

TOTAL PERSONNEL EXPENDITURES
AS A PERCENTAGE OF TOTAL FIRE DEPARTMENT
EXPENDITURES

<u>Town</u>	<u>1980 Population</u>	<u>1983 Total Personnel Expenditures</u>	<u>1983 Total Personnel Expenditures as a Percentage of Total Expenditures</u>
Bedford	13,067	\$ 436,000	87%
Bourne	13,874	755,000	76%
Concord	16,293	723,000	89%
Dennis	12,360	413,000	65%
East Longmeadow	12,905	188,000	86%
Easton	16,623	580,000	91%
Falmouth	23,640	1,288,000	98%
Hanover	11,358	292,000	81%
Holliston	12,622	84,000	100%
Ipswich	11,158	407,000	89%
Longmeadow	16,301	481,000	93%
Marblehead	20,126	1,224,000	95%
North Reading	11,455	530,000	86%
Northbridge	12,246	177,000	76%
Saugus	24,746	1,035,000	99%
Scituate	17,317	1,306,000	96%
Sharon	13,601	415,000	92%
Westford	13,434	102,000	42%
Whitman	13,534	240,000	100%
Wilbraham	12,053	523,000	88%
Wilmington	17,471	906,000	97%

SOURCE: THE MUNICIPAL YEAR BOOK 1984, International City Management Association, 1984.

D. REVIEW OF GENERAL STAFFING PATTERNS

A review of general staffing patterns indicated that there is a major reliance on the call man concept of staffing with a minimal number of full time career personnel in three of the four departments (see Figure 11 below).

<u>FIGURE 11</u>		
<u>COMPARISON OF STAFFING</u>		
<u>TOWN</u>	<u>FULL TIME FIREFIGHTERS</u>	<u>CALL FIREFIGHTERS</u>
Shrewsbury	34	26
Westborough	14 (15) *	16
Northborough	5 (9) *	37
West Boylston	0	56
TOTAL	<u>53</u>	<u>135</u>

*(Westborough and Northborough full time personnel as of 7/1/84)

There does not appear to be excessively high or low staffing in the four departments. Certain shared arrangements have implications for staffing. However, if there was a regionalization of apparatus, for example, there might be some potential for reducing staffing.

E. GENERAL PRIORITIES FOR SERVICE IMPROVEMENT

The general priorities for service improvement center around the absence of a communications system that would permit inter-communication among fire suppression forces of the towns participating in the study. The number one priority would be an immediate area communications system, dedicated to fire suppression operations and having the capability of expansion into the south county mutual aid network in the future.

The second priority identified is the need for formal mutual aid agreements between the participating towns. In addition, every effort should be made to formalize the "south county" mutual aid system as has been done by the north county towns under the "Mid-State" mutual aid system.

The Town of West Boylston is a member of "Mid-State" fire mutual aid by virtue of the town being located in the North county area. The format of the agreement in use by the Mid State Fire Mutual Aid Association could be adopted for use as an inter-local agreement. (See copy in Appendices.)

F. NEED FOR SPECIALIZED EQUIPMENT

In an attempt to identify the need for specialized equipment, a review was made of the participating towns, documents, the list of specialized equipment brought out in the joint meeting attended by representatives of the towns on May 21, 1984 and further input from each of the chiefs during subsequent personal interviews. The chiefs' preferences for specialized equipment and our priorities assigned to each are listed in FIGURE 12 on the next page.

It is obvious that there is not total agreement among the participants except in two areas: the need for a hazardous materials unit to serve the area and the need for area radio communications. One town is already a part of an existing system in the north county area but agrees that there is a real need for an area system serving the participating towns.

The most pressing need is for the establishment of an area fire radio communications capability followed closely by the need for formal mutual aid agreements between towns.

The priority of need for the remaining items is indicated by number on the listing--those numbered 1 being most important. All have some importance with the exception of a mobile lighting unit for which no real need is evident.

FIGURE 12

SPECIALIZED EQUIPMENT

<u>VEHICULAR</u>	<u>Source of interest (See note below)</u>	<u>Priority</u>	<u>See A Need (C)</u>	<u>Nice To Have (C)</u>	<u>See No Real Need (C)</u>
Mobile Light Unit	(A)	-	-	-	-
Foam Unit	(A) & (B)	5	X		X
Elevating Platform	(B)	4		X	
Hazardous Materials	(B)	2	XXXX		
Large Dia- meter Hose	(B)	3	XXX		X
<u>OTHER EQUIPMENT</u>					
Radio Commu- nication	(B)	1	XXX		
Mutual Aid (Formal)	(C)	1	X		XX
Training	(C)	5	X		
Verbal Formal Communica- tion	(C)	2	X		

NOTES:

(A) Application to EOCD (B) Initial Meeting (C) Interviews
(1-5) Priority

"X" denotes number of departments responding affirmatively to need.

G. OPPORTUNITIES FOR SHARING MAJOR EQUIPMENT,
FACILITIES AND SPECIALIZED EQUIPMENT

There is a real opportunity and a real potential for sharing existing apparatus, equipment and facilities to varying degrees. As a starting point, each of the participating departments should produce a detailed inventory of apparatus, equipment in use and spare equipment in storage to be circulated among the participants so that each will have knowledge of what is available for loan or possibly for purchase. For example, before a department purchases specific fittings, nozzles, wyes, etc., it could consult the inventory and perhaps purchase the item from or share the item with the department having it in storage. Another example would be where a department converts from 1½" hose to 1 3/4" hose. Their supply of 1½" hose could be made available to other departments still using it.

Special materials such as foam could be shared by having each town provide a given amount of foam to a central storage area (at a fire station having room for it) where it would be available to any department that needed it. The department that used the foam would be obligated to replace it.

Air supply for self-contained breathing apparatus could be shared by having each town donate two or more air tanks to be placed with the Westborough auxiliary cascade unit (only one available within four towns) and made available to the other participating departments.

Any special equipment such as proximity suits and air bag rescue equipment, now owned by each of the departments could be available to the others.

The potential for sharing includes apparatus, visual aids and personnel expertise. In fact the potential is almost limitless. To provide for the sharing of apparatus and equipment, a formal written agreement would be necessary. Agreements could be formalized to provide aerial ladder coverage for all participating towns through an established response procedure. As a result, rather than a town buying another aerial ladder, it might opt to purchase an aerial platform to be shared equally by the consortium. The actual purchase could be made individually by one town or a shared cost agreement could be arranged between all the towns. The same potential occurs regarding the purchase of any apparatus and for any of the specialized equipment that is not required frequently enough to justify duplication from town to town.

An additional opportunity for potential sharing is that of an agreement for joint purchase of fire equipment. Standard items that could be purchased in greater numbers at reduced cost include helmets, coats, boots, turnouts, gloves, work uniforms, inspection jackets, caps, dress uniforms, hose, rope, foam, oil, diesel fuel, gasoline and even building and apparatus maintenance supplies. A program of joint purchasing would not require a central storage facility; vendors would be directed to deliver to each department as ordered. Consideration should be given to inviting other area departments to join this endeavor as a means of further reducing costs.

H. THE SERVICE AND FINANCIAL FEASIBILITY OF VARIOUS SHARED ARRANGEMENTS

Service feasibility of shared arrangements would depend upon a formalized system of availability on a "first come, first served" basis. The standard operating procedure should be developed jointly by the towns and any revisions or amendments to the agreement would have to be adopted by all parties.

The financial feasibility of shared arrangements would similarly require detailed planning. Some of the factors which the towns should consider and negotiate with each other, depending upon the type of arrangement, are the following:

- . Legal implications surrounding the sharing of costs
- . Liability issues of joint purchase and/or use
- . Length of agreement
- . Identification of responsibilities for garaging, upkeep routine maintenance, repair and staffing of equipment of facility
- . Location of equipment or facility
- . Responsibility for training and certifying users
- . Agreement on financing methods (e.g. purchase, lease, or lease/purchase)
- . Cost allocation formulas which would equitably distribute costs according to mutually agreed upon variables; appropriate variables might be population, population density, incidence data, frequency of use, area served; the formula might also allow "credits" to a town providing facilities, maintenance and staffing.

While sharing financial responsibility will require detailed planning and preparations, such sharing is not an insurmountable barrier. Rather it is a vital factor in determining the commitment to be made by the fire departments and by the town administrations. It will not be an easy task.

II. TASKS RELATING TO AN EXAMINATION OF THE COSTS OF FINANCING SHARED EQUIPMENT

A. EQUIPMENT AND FACILITIES

APPROPRIATE FOR SHARED ACQUISITION

Equipment and facilities considered appropriate for shared acquisition include the following:

1. ELEVATING PLATFORM APPARATUS

Given a priority number of 4 in Figure 12, SPECIALIZED EQUIPMENT, elevating platform apparatus should assume much greater importance in the future when the next ladder truck is retired. The four towns will have ample opportunity to plan for joint acquisition.

2. VEHICLE FOR STORAGE AND TRANSPORTATION OF FOAM

A foam unit was not given high priority in Figure 12. However, the four towns would benefit by sharing a large trailer equipped with 200 to 300 gallons of concentrate stored in 5 gallon containers.

3. VEHICLE DESIGNED TO CONTAIN A REEL FOR LARGE DIAMETER HOSE, INCLUDING HOSE AND FITTINGS.

Assigned the middle priority number of 3, this type of vehicle would be highly suitable for sharing although there is presently not a pressing need for one.

4. HAZARDOUS MATERIALS INCIDENT MOBILE UNIT WITH ALL NECESSARY EQUIPMENT.

All four towns saw a strong need for a hazardous materials unit. Assigned a priority number of 2, the hazardous materials unit is a good candidate for acquisition in the near future.

5. RADIO COMMUNICATION BASE STATION, PAGE ENCODER, AND BACK UP TRANSMITTER.

This was given top priority and is discussed below.

6. A COMMUNICATIONS/SPECIAL EQUIPMENT CENTER WHERE COMMUNICATIONS OPERATIONS AND EQUIPMENT OF SPECIALIZED NATURE COULD BE STORED AND MAINTAINED.

While not critical, a communications/special equipment center has numerous benefits which are discussed below.

A shared communications center is an opportunity to develop and implement a central dispatch, dedicated to fire department communication needs. The elements of a communications center would include, telephone, radio, pager, public addresses to all stations, fire incident recording, fire incident record keeping, hazardous materials data, property/occupancy data, and fire mutual aid coordination capability, in both equipment availability and incident handling. A further value that a center could offer would be an extension of the pager system to encompass key town personnel.

Vehicles for the storage and transportation of special equipment (e.g., foam, large diameter hose and possibly the "Haz-Mat" unit) could be specially designed trailers that could be picked up by any department needing the unit. The use of a trailer is less expensive than purchasing a truck type vehicle for each of these units.

The communication facility could be designed to use the prefabricated type of construction commonly in use by industry in this area. The facility could be readily adapted to include space for a physical fitness center and a training center. The site, if adequate to the need, could be designed to be a central training site available to all participating towns.

B. ACQUISITION, MAINTENANCE AND OPERATING COSTS

While there is potential for sharing a variety of apparatus, equipment and facilities, the following applications of the shared approach are most appropriate for initial attention:

1. Joint communications system
2. Hazardous materials unit
3. Fitness/training center
4. Storage vehicle for foam and large diameter hose
5. Aerial elevating platform vehicle

The discussions of the five applications are presented as illustrations of the types of systems and pieces of equipment which may be appropriate. In soliciting costs from equipment manufacturers, certain assumptions were made by both consultants and vendors. The consultants do not endorse any specific manufacturer or manufacturer's system configuration recommendation. The manufacturers have offered estimates, only, of equipment costs. Both the consultants and vendors agree that there are variables which determine each individual system configuration and costs. These variables would have to be addressed by the towns before a vendor were to recommend a specific system or piece of apparatus.

1. JOINT COMMUNICATIONS SYSTEM

There are several advantages to joint dispatching among the four towns. Communications would be housed in a central location, dispatching all apparatus on a common radio frequency. This would improve mutual aid response and fire ground communications during joint operations. In addition, the potential for regionalization of services would be enhanced.

Realistically, however, a joint communications center may not be politically feasible for Shrewsbury, Westborough, Northborough and West Boylston for several reasons. West Boylston, which has a sophisticated communications center staffed by civilians dispatching for police and fire, indicated that they had no need to participate. Northborough uses the police department for dispatching and sees no direct advantage to it. Shrewsbury and Westborough use fire fighters for dispatching and perceived it as a "cost-free" situation. Because it was not apparent to the four towns that a joint communications center could lower the cost of their current communications operations, town representatives felt that the concept would be politically and financially impossible to sell. Interest was expressed by the towns, however, to have the capability of communicating with each other.

Despite the obstacles to joint communications center, the consultants feel it worthwhile to offer some cost and equipment information for a joint dispatch center and an inter-communications capability for the four towns. A communications vendor was helpful in providing the following information.

DISPATCH CENTER

The main component of the dispatch center would be the dispatcher's radio control console. This is a self-contained unit equipped with radio control and backup, a work surface, chair and typewriter desk and operated by one person through one microphone. The console would control the four towns' base stations.

Features of the console are the following:

- . cross channel patch
- . simulcast
- . paging
- . phone patch
- . 20 channel dual transport with 2 25 hour tapes
- . 2 instant recall telephone recorders (gives 60 minutes of voice activated tape).
- . 2 10 line telephones

A cost estimate furnished by one vendor for the dispatcher's Radio Control Console as described above is \$70,000. This is neither the least expensive or most expensive system available. The vendor mentioned two recent installations, one at \$10,000 and one at \$14,000, but felt the \$70,000 system might be appropriate. The four towns obviously would want to decide on specifications before going out to bid.

RADIO SYSTEM

An appropriate radio system to allow the four towns to communicate with one another would depend upon geographical considerations. The vendor offered, by way of illustration, a radio system in the UHF band. Whether this system could be used would be dependent upon the availability of frequencies. The four components of the system are the base stations, the remote repeaters, mobile radios and portable radios.

BASE STATIONS

Each town would have 2 base stations - 1 for local frequency and 1 for regional frequency. They would be equipped with tone-coded squelch, which eliminates annoying co-channel interference.

REMOTE REPEATERS

Each town would have 2 100 watt repeaters with emergency power. These extend the broadcasting distance by allowing a relay between 2 mobile stations.

The antenna system would be a 9 dB gain antenna made of 7/8" low density foam heliax. All repeaters would be tone remote controlled. The system should have emergency power and lightning and AC (line current) surge protection.

MOBILES

Motorola assumed 8 mobiles per town. They would be 100 watts and 4 channels with channel scan. The channels would be configured as follows:

Local Frequency

Channel 1: mobile→repeater→mobile

Channel 2: mobile→mobile

Regional Frequency

Channel 3: mobile→repeater→mobile

Channel 4: mobile→mobile

The repeater bypass feature is advantageous if the repeater goes out, if one repeater is out of range of the mobiles, or the mobiles are all on the same scene.

PORTABLES

The vendor assumed 10 portables per town. There would be one four watt portable with remote speaker microphones, for every mobile and two spares. Eight would be equipped with vehicle chargers and two with desk top chargers.

The total cost for the UHF Systems per town would be as follows:

<u>Components</u>	<u>Cost</u>
2 base stations @ \$10,000	\$20,000
2 remote repeaters @ \$2,000	4,000
8 mobiles @ \$3,000	24,000
10 portables @ \$2,500	25,000
	<u>\$73,000</u>

If the four towns were to participate, the total equipment cost is estimated to be \$292,000 (\$73,000 x 4).

Maintenance costs should not be significant. Usually equipment comes with a four month warranty and a one year warranty on parts. Maintenance contracts are available.

2. HAZARDOUS MATERIALS UNIT

In exploring the costs of financing a shared hazardous materials unit, the consultants contacted Stephen A. Black, Chairman of the Metrofire Hazardous Material Vehicle Committee and also Fire Chief of the Wellesley Fire Department. Metrofire, a consortium of 33 municipalities within Route 128 and Logan Airport, exists "for the purpose of updating, expanding and controlling mutual aid in the area and to act as a common entity for exploring and improving other areas of management, operation and effectiveness of their fire service." A description of the organization appears in the appendices.

Chief Black explained that Wellesley donated the basic vehicle for use by Metrofire. The light weight rescue truck, which was purchased several years ago for \$24,000, but whose current cost would be approximately \$30,000, has been equipped with materials and apparatus which are not normally in a fire department inventory. The list of equipment was furnished by the Massachusetts Firefighting Academy (see Appendices for Metrofire Hazardous Materials Incident Support Unit: Proposed Inventory & Price List).

In perusing the inventory and price list, one sees that much of the material was donated. Chief Black explained that many donations came from industry, but that the Metrofire Treasury also contributed money (the cost to belong to Metrofire is \$500/year).

The per department share of the total equipment cost is shown in FIGURE 13 below:

<u>FIGURE 13</u>	
<u>METROFIRE HAZARDOUS MATERIALS UNIT COST ANALYSIS</u>	
TOTAL Equipment Cost (excluding vehicle)	\$34,200.75
Donations	- 8,756.05
	<u>\$25,444.70</u>
Per Department Share (34 departments)	\$ 748.37

The cost to the four towns reviewed in the report would be greater than \$35,000 if a light weight rescue truck were not available. Purchasing a truck could increase the total cost of \$65,000. However, the four towns might also be able to get private industry in the area to make contributions toward equipment as Metrofire did.

The maintenance and operating costs of the haz mat unit are relatively minor. The haz mat unit in the Metrofire district is anticipated to be used no more than 10 times a year. Operating costs would include normal routine maintenance on the vehicle (this would depend upon condition and age) and an indirect cost of transporting the vehicle to the incident.

In the case of the Metrofire haz mat unit, Wellesley firefighters would drive the vehicle to the site. The firefighters in whose jurisdiction the incident was, would take charge of the unit at that point. After the situation was stabilized by the other fire department, the Wellesley firefighters would return the haz mat unit back to Wellesley.

Given the anticipated low frequency of use, the labor cost to Wellesley will be negligible. The chief feels that any minor expenses associated with the vehicle's location at the Wellesley fire department are more than compensated for by the fact that the vehicle is most accessible to the Town of Wellesley.

The acquisition of the haz mat unit would probably be more economical if shared by more than four towns. Therefore, the potential four town consortium might consider sharing this unit with communities within a twenty mile radius of the unit's location.

3. FITNESS/TRAINING CENTER

While a fitness/training center is not an urgent priority, the four towns have a good opportunity to set one up at a relatively minor cost. There is already room available at the Northborough Police Station and if the towns decided upon participating in joint communications center, the facility could be planned to include a fitness/training area. The appropriate way to equip the center would be with donated exercise equipment.

4. STORAGE VEHICLES FOR FOAM AND LARGE DIAMETER HOSE

Both vehicles would be a trailers designed to be attached to a piece of apparatus. A large diameter hose could be carried on an electric reel or loaded into a body compartment in the standard hose load. Purchase of trailers would appear to be the most economical approach.

5. AERIAL ELEVATING PLATFORM VEHICLE

The consultants contacted several equipment manufacturers for quotations on aerial elevating platform vehicles. One manufacturer provided the following information:

PLATFORM

This is a ladder-type device in lengths of 75' 95' and 110' with a square platform at the end of the ladder. The chassis must have a tandem chassis and a second set of ontriggers.

The cost is approximately \$35,000.

Another manufacturer charges approximately \$230,000 for a base unit with a platform on it and \$330,000 with the additions of a pump and waterways.

Operating and maintenance costs would depend upon frequency of use and whether fire department mechanics did the work or maintenance agreements were purchased.

C. TRAINING NEEDS AND ANY RELATED COSTS

Training needs and costs would have to be determined individually for each of the various specialized units or situations being shared. Adequate training is a prerequisite of a successful shared use program, particularly under a joint purchase/shared use arrangement. Each department would be obligated to provide the level of training agreed upon for the specific unit. A sufficient number of personnel would need to be trained to insure that trained personnel are available at all times for possible use of the units.

The cost of training, in some cases, would be minimal with the manufacturer of the equipment or apparatus providing the initial training with in-house training on a continuing basis. However, training sufficient in nature to provide personnel for a hazardous materials unit could involve considerable costs. The availability of training and the location of the training facility are variables that make estimating costs difficult. One means of reducing training costs is to take advantage of the knowledge of any fire personnel, career or call, who may have prior knowledge or experience. Industry will very often provide a source of training at little or no cost. In developing the financial arrangement for sharing the cost of the apparatus and/or the equipment, it would be wise to include specialized training costs.

In terms of the five areas mentioned for joint involvement, training needs and costs are as follows:

1. JOINT COMMUNICATIONS CENTER:

If the four departments were to use the present dispatchers, training time would be minimal.

The equipment manufacturers would provide some training assistance.

If the departments hired civilian dispatchers, these employees should receive a six week training course while being paid. The instructors would come from one or more participating departments which would either volunteer the time of the instructor or assess the participating departments for the instructors' salary.

2. HAZARDOUS MATERIALS UNIT:

The Massachusetts Firefighting Academy has developed a program for using a haz mat unit. Designed for the Metro-fire District, it is a two step process. As it functions for the 34 Metrofire communities, Phase I familiarized the firefighters in each community with the equipment and materials on the truck. Each of the four groups in each of the 34 departments receives $\frac{1}{2}$ day of training.

Phase II, which will begin in Fall 1984, will provide 1 day of specialized training for designated people in each of the four shifts of each department.

Generally the Massachusetts Firefighting Academy provides training free of charge. They should be contacted for information regarding haz mat unit training.

3. FITNESS/TRAINING CENTER:

There should be no cost to the four departments on collaborating in establishing cooperative training and physical fitness programs. Assistance is available from the following:

RESOURCE CENTER FOR FIRE FIGHTER FITNESS
Department of Health, Physical Education
and Recreation
Bridgewater State College
Bridgewater, MA 02324

They can provide assistance in setting up a program suitable for the four towns.

4. STORAGE VEHICLES FOR FOAM AND LARGE DIAMETER HOSE:

No special training is required to operate these vehicles.

5. AERIAL ELEVATING PLATFORM:

The price of the vehicle includes operational training when the vehicle is delivered to the fire department. There are no direct costs in training. Further training to become proficient in emergency uses would be conducted in-house as part of the department training program.

D. FINANCING ALTERNATIVES

The source of funds for any of the shared equipment or programs suggested would have to come from one of four sources or a combination of them: property taxes, grants, bonds, or private contributions. As mentioned earlier in the discussion of the Metrofire haz mat unit, the participating fire departments were very successful in getting equipment donations. The four towns might also try that approach.

In terms of the more expensive items, e.g. a communications system and an aerial platform vehicle, the towns would have to rely on property taxes or bonds. While there may not be any immediate opportunity for any new funding, the towns could build into their capital planning strategies an appropriation to share in the purchase of a piece of equipment.

E. COST ALLOCATION FORMULAS

There are many options available for dividing the acquisition maintenance and operating cost of jointly shared equipment, facilities, programs, etc. Depending upon the item shared, any of the following might be appropriate. While this is not an exhaustive list (the four towns might also have some ideas), the options presented below are the most common:

FIGURE 14

COST ALLOCATION FORMULAS

- Option 1: Equal distribution of capital and annual costs.
- Option 2: Equal distribution of capital costs with annual costs charged according to use.
- Option 3: Capital costs apportioned on the basis of population with annual costs charged according to use.
- Option 4: Capital and annual costs apportioned on the basis of population.
- Option 5: Capital costs apportioned on the basis of geographical area with annual costs charged according to use.
- Option 6: Capital and annual costs apportioned on the basis of geographical area.
- Option 7: Capital and annual costs apportioned on the basis of population density.
- Option 8: Capital and annual costs apportioned on the basis of population, geography and use.
- Option 9: One town to own the equipment and set a rate to be charged for the other towns who will use it.

As an illustration of how costs might be allocated, we will use several of the equipment recommendations mentioned previously and four cost allocation formulas using population, geographical area, population density and use, as defined by incidence data.

Figure 15, Cost Allocation by Population, shows how the towns would apportion costs using population only.

FIGURE 15

COST ALLOCATION

BY POPULATION

<u>TOWN</u>	<u>POPULATION*</u>	<u>PERCENTAGE OF TOTAL</u>
SHREWSBURY	22,674	42.73%
WESTBOROUGH	13,619	25.66%
NORTHBOROUGH	10,568	19.92%
WEST BOYLSTON	6,204	11.69%
<u>TOTAL POPULATION</u>	53,065	

*1980 Federal Census

For the Dispatch Center, Hazardous Materials Unit and Aerial Elevating Platform described in Section II. B. of this report, each town's share would be as follows:

\$70,000 DISPATCH CENTER

SHREWSBURY	.4273	(70,000) =	\$29,911
WESTBOROUGH	.2566	(70,000) =	17,962
NORTHBOROUGH	.1992	(70,000) =	13,944
WEST BOYLSTON	.1169	(70,000) =	8,183
			<u>\$70,000</u>

\$65,000 HAZARDOUS MATERIALS UNIT

SHREWSBURY	.4273	(65,000) =	\$27,774
WESTBOROUGH	.2566	(65,000) =	16,679
NORTHBOROUGH	.1992	(65,000) =	12,948
WEST BOYLSTON	.1169	(65,000) =	7,598
			<u>\$65,000</u>

\$330,000 AERIAL ELEVATING PLATFORM

SHREWSBURY	.4273	(330,000) =	\$141,009
WESTBOROUGH	.2566	(330,000) =	84,678
NORTHBOROUGH	.1992	(330,000) =	65,736
WEST BOYLSTON	.1169	(330,000) =	38,577
			<u>\$330,000</u>

FIGURE 16, COST ALLOCATION BY GEOGRAPHICAL AREA, shows how the towns would apportion costs using square miles as the determination.

FIGURE 16		
<u>COST ALLOCATION BY</u>		
<u>GEOGRAPHICAL AREA</u>		
<u>TOWN</u>	<u>GEOGRAPHICAL AREA</u>	<u>PERCENTAGE OF</u> <u>TOTAL AREA</u>
SHREWSBURY	21.83 s.m.	28.78%
WESTBOROUGH	21.51 s.m.	28.36%
NORTHBOROUGH	18.72 s.m.	24.68%
WEST BOYLSTON	13.78 s.m.	18.17%
TOTAL AREA	75.84 s.m.	

Using the same equipment examples, costs change as follows:

\$70,000 DISPATCH CENTER

SHREWSBURY	.2878	(70,000) =	\$20,146
WESTBOROUGH	.2836	(70,000) =	19,852
NORTHBOROUGH	.2468	(70,000) =	17,276
WEST BOYLSTON	.1817	(70,000) =	12,719
			<u>\$70,000</u>

\$65,000 HAZARDOUS MATERIALS UNIT

SHREWSBURY	.2878	(65,000) =	\$18,707
WESTBOROUGH	.2836	(65,000) =	18,434
NORTHBOROUGH	.2468	(65,000) =	16,042
WEST BOYLSTON	.1817	(65,000) =	11,811
			<u>\$65,000</u>

\$330,000 AERIAL ELEVATING PLATFORM

SHREWSBURY	.2878	(330,000) =	\$94,974
WESTBOROUGH	.2836	(330,000) =	93,588
NORTHBOROUGH	.2468	(330,000) =	81,444
WEST BOYLSTON	.1817	(330,000) =	59,961
			<u>\$330,000</u>

FIGURE 17

COST ALLOCATION BY INCIDENCE *

<u>TOWN</u>	<u>CALLS ANSWERED</u>	<u>PERCENTAGE OF TOTAL CALLS</u>
SHREWSBURY	1,327	40.30%
WESTBOROUGH	1,241	37.69%
WEST BOYLSTON	390	11.87%
NORTHBOROUGH	335	10.17%
TOTAL CALLS	3,293	

*SOURCE: FIGURE 1, COMPARISON OF RESPONSE ACTIVITY FOR 1983

The cost allocation formulas using only one of the factors of population, geography and incidence have advantages for some communities and disadvantages for others. FIGURE 18, SUMMARY OF COST ALLOCATION FORMULAS, compares the percentages.

FIGURE 18
SUMMARY OF COST ALLOCATION FORMULAS

<u>TOWN</u>	Popu- lation (1)	Geog- raphy (2)	Inci- dence (3)	Popu- lation Density* (1) + (2)	Three Factors** (1) + (2) + (3)
SHREWSBURY	42.73%	28.78%	40.30%	35.76%	37.27%
WESTBOROUGH	25.66%	28.36%	37.69%	27.01%	30.57%
NORTHBOROUGH	19.92%	24.68%	10.17%	22.30%	18.26%
WEST BOYLSTON	11.69%	18.17%	11.84%	14.93%	13.90%
Range between High and Low	31.04	10.61	30.13	20.83	23.37

* Population and geography are given equal weights.

** Population, geography and incidence are given equal weights.

Shrewsbury benefits by opting for a geography based formula, Westborough for a population formula, Northborough for a incidence formula and West Boylston for either an incidence or population formula. The geography formula is the one closest to equal distribution of costs; the population formula is the most unequal one.

In an attempt to redistribute the weights, the consultants propose the population density formula and "three factors" formula in FIGURE 17. The population density formula gives

equal weight to population and geography; the "three factors" formula averages population, geography and incidence. Both of these formulas narrow the difference between the communities which will have the highest and lowest portions to pay.

Using the same equipment examples, the costs under the population density formula are now the following:

<u>\$70,000 DISPATCHER CENTER</u>			
SHREWSBURY	.3576	(70,000) =	\$25,032
WESTBOROUGH	.2701	(70,000) =	18,907
NORTHBOROUGH	.2230	(70,000) =	15,610
WEST BOYLSTON	.1493	(70,000) =	10,451
			<hr/> \$70,000

\$65,000 HAZARDOUS MATERIALS UNIT

SHREWSBURY	.3576	(65,000) =	\$23,244
WESTBOROUGH	.2701	(65,000) =	17,556
NORTHBOROUGH	.2230	(65,000) =	14,495
WEST BOYLSTON	.1493	(65,000) =	9,704
			<hr/> \$65,000

\$330,000 AERIAL ELEVATING PLATFORM

SHREWSBURY	.3576	(330,000) =	\$118,008
WESTBOROUGH	.2701	(330,000) =	89,133
NORTHBOROUGH	.2230	(330,000) =	73,590
WEST BOYLSTON	.1493	(330,000) =	49,269
			<hr/> \$330,000

The "three factors" formula distributes costs as follows:

\$70,000 DISPATCH CENTER

SHREWSBURY	.3727	(70,000) =	\$26,089
WESTBOROUGH	.3057	(70,000) =	21,399
NORTHBOROUGH	.1826	(70,000) =	12,782
WEST BOYLSTON	.1390	(70,000) =	9,730
			<u>\$70,000</u>

\$65,000 HAZARDOUS MATERIALS UNIT

SHREWSBURY	.3727	(65,000) =	\$24,226
WESTBOROUGH	.3057	(65,000) =	19,871
NORTHBOROUGH	.1826	(65,000) =	11,869
WEST BOYLSTON	.1390	(65,000) =	9,035
			<u>\$65,000</u>

\$330,000 AERIAL ELEVATING PLATFORM

SHREWSBURY	.3727	(330,000) =	\$122,991
WESTBOROUGH	.3057	(330,000) =	100,881
NORTHBOROUGH	.1826	(330,000) =	60,258
WEST BOYLSTON	.1390	(330,000) =	45,870
			<u>\$330,000</u>

While any formula is going to be more or less advantageous to particular town, the advantages of joint purchasing should provide an incentive for the towns to work toward a mutually agreeable formula. The formulas should be adjusted when factors such as population and incidence change. While the consultants used incidence figures from one year, it is advisable to use a three year average. If maintenance and operating costs are to be shared according to a formula using incidence, the towns should use a three year moving average.

In lieu of area in square miles as the geographical determinant, it might be more appropriate to use miles of road.

There are also some creative substitutes for cash outlay: a community could be given a "credit" for providing a facility or mechanical expertise in maintenance. Whatever formulas the towns agree upon, they can readjust them when circumstances change.

III. TASKS RELATING TO THE DEVELOPMENT OF SHARED MANAGEMENT/OPERATIONS PLAN FOR EQUIPMENT APPROPRIATE FOR SHARED ACQUISITION

A. POLICIES/PROCEDURES REGARDING UTILIZATION, TRAINING, STAFF AND MAINTENANCE OF EQUIPMENT

Policies and procedures regarding utilization, training, staffing and maintenance of equipment will vary depending upon the object to be shared and the cost allocation formula chosen. Developing a comprehensive model in this report to address each potential circumstance would be inappropriate. The large number of variables makes it difficult to develop a model which would have universal application.

A joint committee should establish policies and procedures for each shared arrangement. If a piece of apparatus or equipment is to be shared, the committee should agree on the responsibilities for utilization, training, staffing and maintenance of the item. The steps for developing some kind of consensus appear in the next section.

D. STEPS NEEDED TO IMPLEMENT A SHARED ARRANGEMENT

In order to implement any of the shared arrangements listed in this report, the four participating towns must agree to establish a fire committee with knowledgeable people having authority to speak for each town. An advisory group of the four fire chiefs selected for this study should serve as the core for promoting and organizing the committee. The committee should meet with the selectmen and the selectmen's representatives (managers or executive secretaries) to solicit their support in exploring shared arrangements.

The role of the committee should be confined to three activities:

- . To inventory present facilities and equipment;
- . To explore alternatives in purchasing each time a member department wants to buy something;
- . To establish universal apparatus and equipment specifications for each department to use.

The committee will be the foundation for implementation. It is the committee which must decide, and agree to, the following important issues: the item or facility to be shared, specifications, cost allocation, financing, location of the item or facility and maintenance responsibilities and costs.

The committee or a subcommittee, supported with secretarial help, should undertake material and equipment purchasing and the related service contracts. The operation is a fairly simple one, consisting of the following procedures.

- a. Bi-monthly distribution of order forms to the representatives of each fire department, requesting information on specific material and/or equipment desired for purchase; included would be a list of interested and acceptable bidders.
- b. Review of equipment purchase requisitions to ensure the need and financial funds for equipment, and to see if technical assistance is requested by a town.
- c. Collection of material suppliers and an equipment list and a bidder list.
- d. Distribution of this list to the representatives in each fire department, requesting any additions.
- e. Addition of any equipment and bidders to the list.
- f. Advertising for bids and/or sending out invitations to bid.
- g. Receipt of bids.
- h. Opening and awarding of bids.
- i. Informing winning bidders, and thanking losing bidders.

For the most part, this procedure consists of secretarial work, mailing out forms and invitations, collating lists, etc. The committee will need to spend a very nominal amount of time overseeing this work. Usually this will entail making final reviews where necessary and signing letters. A meeting of the entire group will be the occasion for the opening and awarding of bids.

Timing on this procedure is flexible. The suggested bi-monthly cycle is fairly arbitrary and should be adjusted to demand. In the beginning, the cycle will probably be irregular, and long, taking a year or more to regularize itself. During and after this time, it is probable that the list of equipment will grow as towns participate more fully.

The central purchasing of materials should realize a significant savings for the member towns. The firm establishment of the group in the eyes of town officials and equipment retailers will lead to the possibility of a wider range of economical equipment and material purchasing.

What is most important is that a group be set up which can be operated simply, and which is able to respond directly to the needs of town fire departments. Initially it can be used by the four towns, then perhaps lend itself to operation under a sub-regional organization.

NOTE: Some of the material for this section can from
A Plan for Highway Maintenance in Franklin County
through Intergovernmental Cooperation, July 1972,
Curran Associates, Inc., Northampton, Massachusetts.

C. OBSTACLES TO SHARED ARRANGEMENTS

The fire service traditionally has solved its problems by increasing its budget, but the traditional structure of the local fire department is experiencing increasing pressure as communities cut expenditures. The ramifications of cuts and expenditures are that:

1. The local fire service may not be adequately staffed to provide fire protection and public relations programs.
2. Equipment resources may be totally inadequate for a serious fire.

Thus far, the report has listed many advantages both financial and qualitative, to shared arrangements. For small departments to try to purchase specialized equipment separately would result in spending astronomical sums of money. Although there clearly are benefits to some forms of regional consolidation, there will be a number of potential obstacles. One obstacle is the parochial nature of Massachusetts town government, causing each member to believe that each town's way is the only way and each town's brands are the best.

If the potential for reduced costs is to be achieved, it will also be necessary to change the attitude that everything must be new. Most important is whether the apparatus, equipment or material will adequately do the job, not whether it is new or used.

Mentioned previously, the obstacle of "will the unit be available when I want it" will need to be overcome by assurance that each need will be handled as it occurs without prejudice. The importance of standard operating procedures for each of the shared units cannot be overemphasized.

All parties to the agreement must be confident that the unit will be used properly and maintained in excellent condition at all times.

The recommendation for shared purchasing will generate the obstacle of agreeing on the type, design make and serviceability of some of the items. Every fire department believes that they are using the best coat, hose, foam or whatever. All participants will need to meet to agree on specifications that will be suitable for all. There will need to be compromises and some restraint to counter the tendency to look for the "very best". A realistic approach toward shared purchasing will result in standardization and the reduction of many present incompatibilities of equipment and operations.

Adopting a shared use concept will be difficult. Opposition can be anticipated from within the fire service as well as from local officials. While there is an initial threshold of interest in the concept, a parochial attitude often exists which acts as a major inhibitor to thinking conceptually about a shared arrangement. It is natural for local fire chiefs and individual communities to feel they will lose direct control of the fire department if they participate in a shared arrangement. However, we believe this report provides the initial guidance to achieve specific and potentially dramatic cost saving to break down barriers to sharing fire service resources.

APPENDICES

- Documentation Provided by Participants
- What is Metrofire?
- Metrofire 1982-1983 Annual Report
- Metrofire Hazardous Materials Incident Support Unit -- Proposed Inventory and Price List
- By-Laws of Mid State Fire Mutual Aid Association

DOCUMENTATION PROVIDED BY PARTICIPANTS

- (1) Table of organization
- (2) Roster of personnel, by name and rank
- (3) List of vehicles (age, type, condition)
- (4) Street map of city showing scale, location of fire stations
- (5) Manpower distribution for fire suppression
- (6) Latest annual report (if any)
- (7) Division/department budget, current and last five years

What is Metrofire?

The Fire Chiefs of twenty-five communities and Massport, in the Greater Boston area, formed the Metrofire Association in 1976 with the consent and approval of their local governments, for the purpose of updating, expanding and controlling Mutual Aid in the area and to act as a common entity for exploring and improving other areas of management, operation and effectiveness of their Fire Service.

In July of 1980 eight more communities joined Metrofire bringing the total membership to thirty-four, encompassing the urban area within the 128 perimeter. This association is enacted under provisions of Chapter 40 section 4A and Chapter 48 section 59A of the Massachusetts General Laws.

The Bylaws state the purposes as:

- To provide Fire Services mutual aid assistance in the Metrofire area.
- To provide coordination of all Fire Services mutual aid activities in the area.
- To interface with existing Civil Defense Fire District 13 and provide its Fire Mobilization.
- To provide overall planning for coordinated activities in times of emergency and disasters.
- To provide for other common functions for the good of the Fire Service in the area served, including: (but not limited to)
 - collective purchasing
 - group training
 - common maintenance
 - coordinated communications
 - common insurance
 - seminars for exchange of ideas

No urban community, in today's environment of hi-rise structures, sprawling industrial and shopping complexes, an expanding array of hazardous materials, and the continuing problems of urban revitalization, can afford the complete resources in equipment and manpower for complete self-protection. Nor can they, with today's economic pressures and taxation limitations afford complete duplication of support services.

Metrofire is a step by the Area Fire Departments, thru their Chief Officers, to address these problems and their common cost-effective solution.

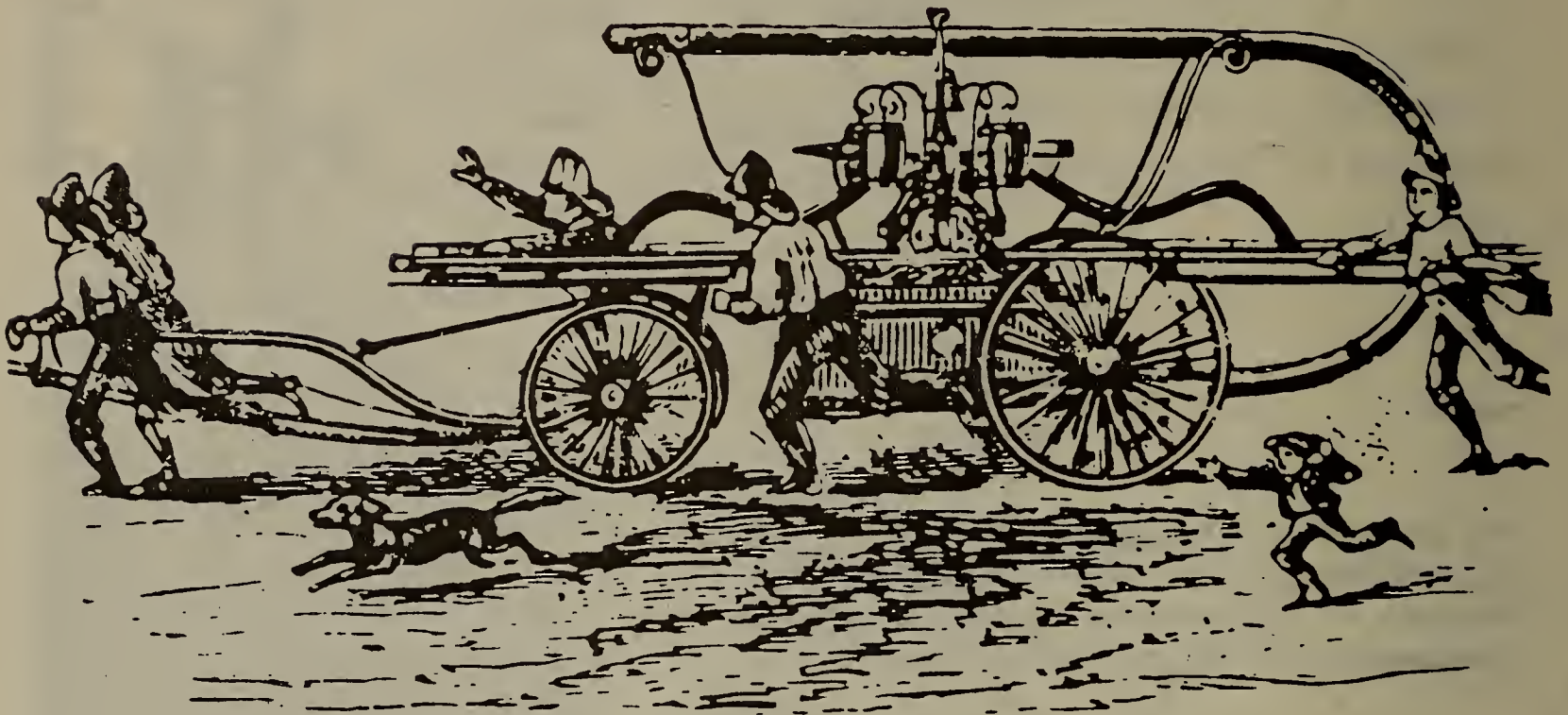
Its basic aim is stated in the resolution of enactment, "Whereas, it has been determined that the provision of fire, rescue, and ambulance service *across jurisdictional lines* in emergencies will *increase the ability to preserve the safety and welfare of the entire area. . . .*"

DISTRICT MAP



METROFIRE

METROFIRE



1982-1983 ANNUAL REPORT

A Message From The Chairman:

Metrofire continues to tackle new challenges and to provide a continual upgrading of our mutual aid system, as it allows us the forum to plan, discuss, and act upon our common problems.

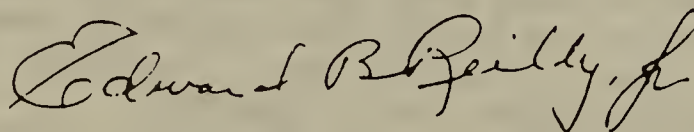
The year began with a rash of suspicious multiple alarm fires in Boston that resulted in many calls for assistance on consecutive Friday nights. By Fall this unusual activity subsided, and although our statistics show a slight rise in activity, by Spring everyone seemed to talk of the quiet year.

We adjusted our running card system again, to the lessons we learn as we move forward. We continued to expand our common purchase activities and see increasing cost efficiency in this area. We are continuing to explore the use of community Cable TV and video tape production for our training and public relations use.

We are on the verge of putting our Hazard Material Support Unit in service: The most ambitious endeavor yet in terms of a shared common resource. 1984 will see it in service and will see us concentrating on expanding areas of common resource usage.

We have proven our ability to act effectively together: now we will expand into new areas of common interest.

Thank you for your efforts which make Metrofire the viable organization it is. Our accomplishments are mounting due to your help and the cooperation of your firefighters and dispatchers.



Edward B. Reilly, Jr.
Chairman
Chief, Newton Fire Department

Mutual Use of Common Resources

One of the purposes of Metrofire is 'to provide for other common functions for the good of the Fire Service in the area served.' The premise for Metrofire is the realization that particularly in today's municipal economy no urban community can afford the total resources for complete self-protection. This of course is the basis for Mutual Aid among communities. A very natural extension of this concept is the mutual sharing of a single or limited numbers of a specialized resource. In the Fire Service there are many instances requiring specialized equipments or resources that are vital to a given situation, but only occasionally used. Metrofire is providing the mechanism to provide for these types of resources to be available on a cooperative shared basis.

The general concept of shared common resource envisions not only the supply of the resource but the sharing of responsibilities for delivering them as needed and the general procedures for their dispatch and use. The ultimate use of a shared resource is left in the hands of the department in need. In some cases involving specialized equipments proper training must be provided before the resource can be placed in service.

The first common resource for Metrofire was the Foam Depot. We established a Foam Bank by purchasing foam and arranging for four communities to store the foam at strategic locations around the district and to deliver it on call to supplement local supplies at any major incident. Next came our 'Footlocker' radio system where an additional stockpile of portable radios on the Metrofire frequency are maintained and delivered to major incidents by a member community. And now our Hazardous Material Support Unit, a specially equipped vehicle, delivered to an incident by a member community, on call to a community in need.

Throughout, our concept is to make available a resource, for use by a department in need under the control of local command officers and on call to these officers as needed. Nothing in our concept prevents those communities who need a given resource more frequently from having one that would be supplemented by the common resource.

There are a multitude of special resources, not limited to equipment, that can be provided under such a cooperative concept. We are beginning to explore the additional areas of need and formulate plans to expand the types and numbers of common resources that the Metrofire concept can provide to increase our overall fire service efficiency and preparedness.

1982-1983 Mutual Aid Activity

MUTUAL AID STATISTICS - JULY 1982 THRU JUNE 1983

Multiple Alarm Fires 332
of which 153 were in Boston - 179 in other communities

A total of 1404 Mutual Aid Apparatus runs were made
in answer to 333 alarms requiring mutual aid.

There were 170 apparatus responses from Boston and 327
apparatus responses to Boston.

And Metrofire alarms were struck - a total of 12 times.

METROFIRE ALARMS

<u>Date</u>	<u>Fire Community</u>	<u>Alarm Level</u>	<u>Box #</u>	<u>Mutual Aid Apparatus</u>	<u>Mutual Aid Communities</u>
10 JULY	Medford	5th	32	11E 3L	10
3 AUG	Everett	5th	213	14E 3L	12
19 AUG	Everett	7th	161	21E 6L	16
5 SEPT	Newton	5th	15	14E 5L	11
17 SEPT	Dedham	4th	56	7E 3L	5
17 OCT	Dedham	4th	421	6E 2L	5
25 OCT	Chelsea	5th	16	14E 5L	11
13 NOV	Lynn	6th	512	6E 2L	7
21 NOV	Dedham	5th	421	9E 4L	7
16 DEC	Cambridge	4th	411	9E 5L	7
4 FEB	Lynn	5th	93	4E 2L	4
1 JUN	Brookline	5th	344	10E 2L	8

As reported in our fiscal 1982 report, June 1983 was the beginning of a very busy summer of suspicious multiple alarm fires in Boston. July and August of 1983 saw 45 of Boston's 153 multiple alarm fires and 139 mutual aid runs were made during those two months in answer to 21 requests for assistance.

In fiscal 1983 we continued with all of our communities sending and receiving aid at one time or another.

The Mutual Aid Fire Suppression Force, based on each communities availability during fiscal 1983, was 46 engine and 19 ladder companies.

1982-1983

Committee Activity

- The Hazardous Material Vehicle Committee has been the focus of the major activity for the year. Through its efforts, arrangements have been made to obtain the use of a vehicle from the Wellesley Fire Department who will also be responsible for its delivery to an incident on dispatch from the control center; surveys of equipment have been made, a complement chosen for the vehicle, and equipments are currently being obtained through donation from industry and direct purchase. In conjunction with the Massachusetts Firefighting Academy, a training program has evolved to provide training to all Metrofire departments in the use of the resources on the Hazardous Material Support Unit.
- The Common Purchase Committee continued its activities in the purchase of hose, turnout coats, gloves, boots and helmets, and expanded into the area self contained breathing apparatus.
- The Film Library Committee continued its procurement of films and equipment, again a district wide inventory of available materials, and embarked on first attempts at video tape production.
- The Running Card Committee again updated the total 10 alarm system, and added additional resources in the form of task forces from other districts to supplement our system beyond the 10 alarm assignments.

1983-1984

Plans

- The Hazardous Material Vehicle Committee will institute use of the Hazardous Material Support Unit through individual department training and the preparation of detailed operating procedures.
- The Common Purchase Committee will further expand its bulk purchase concepts into the area of nozzles and other brassware.
- The Film Library Committee will continue its expansion of resources, and with the Radio Committee develop specific plans for video tape productions involving at a minimum our Hazard Material Support Unit training and the ongoing MBTA training.
- The Radio Committee will reinstitute the implementation of a Microfiche data retrieval system for the control center, deferred last year, and will continue its investigation of the utilization of community Cable TV systems for our use in public relations and training.
- The Metrofire Guidebook of Procedures and Inventories will be completely revised and updated under the direction of the Policy Committee.

Metrofire Hazardous Material Support Unit

Traditionally, Fire Departments are the first responders to life-safety emergency situations. Explosions, accidents, building collapses, liquid spills, and most other unusual occurrences, -as well as fires-, elicit the same cry; "call the Fire Department."

For decades, firefighters have responded to flammable liquid incidents, dangerous chemical incidents, and natural and exotic gaseous leakages. In recent years, Hazardous Material emergencies have become a significant problem for the Fire Service due to the rapidly increasing numbers of such materials and their complexity. The proliferation of newly found or synthetic substances introduced into our manufacturing processes and consumer products is phenomenal; growing at a rate in excess of several thousand substances per year. Experts estimated in 1980, that as many as 50,000 potentially Hazardous Materials were being produced.

In the industrialized urban environment in the Greater Boston area served by Metrofire, the potential for Hazardous Material incidents is high. Recognizing this as a modern day challenge to the resources of the Fire Service in the area, Metrofire has begun a program to provide a common resource for use in such emergencies; and in cooperation with the Massachusetts Firefighting Academy is formulating a training program for the area departments in the use of the specialized equipments that will be provided.

The beginning phase of the plan consists of equipping a vehicle in the district with the necessary specialized equipments to provide protection to the firefighter responders and for detection, determination, and containment of the hazard until proper disposition can be made. This vehicle will be maintained by Metrofire, and will be "delivered" to the scene of an incident by a cooperating Fire Department charged with the responsibility for housing and responding the vehicle upon request of the Metrofire Control Center. Once delivered, the specialized equipments will be available for the use of the requesting department by personnel of their department trained in its use through the established training program.

At the present time, the vehicle has been acquired and is being equipped with its specialized equipments with items contributed by government and industry, as well as direct purchases by Metrofire. The Wellesley Fire Department has accepted the responsibility to house and deliver the unit. The Training program has been formulated and individual department training will begin in the fall of 1983. It is presently contemplated that the Hazardous Material Support Unit will be in full operation with all departments trained in its use by the 1st quarter of 1984.

This program is but another example of the use of a common resource for the common good. When fully equipped, the specialized equipment on board will be valued at over \$50,000; a price prohibitive to each community on its own in today's fiscal environment. Fortunately, although the potential for such incidents is high, the daily number of occurrences is very low, and the cooperative effort of utilizing a common resource provides a realistic solution.

1982-1983

Finances

The following Summary Financial Report depicts our fiscal status for the 1983 year. In addition to our normal operating expenses, major purchases were made during the year for a supply of alcohol foam for our Foam Bank, expansion of our film library, and initial procurements for equipping the Hazardous Material Support Unit. The Finance Committee presented a balanced budget of \$17,000 for Fiscal 1984 which has been approved by the membership. Special projects for 1984 include completion of the Hazardous Material Support Unit, expansion of the Film Library including video tape production, and the development of a Microfiche information retrieval system for the control center (that was deferred last year).

Summary Financial Report

Beginning Balance 1 July 1982 (Reserve Fund)		\$18,287.97
Income July 1982 - June 1983 - Assessments		17,000.00
- Other		640.80
Disbursements (Note 1)		10,543.81
Balance as of 30 June 1983 (Note 2)		25,384.96
(Note 1) Monthly Meeting Expense	\$ 470.47	
Postage and Copying	398.33	
Coordinators Fees	1,500.00	
Coordinators Expenses	459.70	
Printing - Procedures and Guidebook	190.00	
Running Cards	1,003.00	
Annual Report	475.00	
Stationary	153.00	
Film Library Expansion	1,453.00	
Purchase of Alcohol Foam	3,014.00	
Haz. Mat Support Unit Equipment	1,427.31	
TOTAL DISBURSEMENTS	\$10,543.81	

(Note 2) This balance is held in reserve in the 1984 account for emergency items. Outstanding authorizations for this account include \$7,000 for further equipment for the Hazardous Material vehicle and \$4,500 for training for the use of equipments on the Hazardous Material vehicle; both authorizations are on an as needed basis.

1982-1983 Officers

CHAIRMAN	Chief Edward B. Reilly, Jr. - Newton
SECRETARY	Chief Leo McCabe - Medford
TREASURER	Chief Robert McElhinney - Winchester
COORDINATOR	John M. Moore

Policy Committee

- | | |
|--------------------------------------|------------------------------------|
| ● Chief James Connor - Weymouth | ● Chief John Garrity - Malden |
| ● Chief John Thorburn - Weston | ● Chief Walter Maloney - Wakefield |
| ● Chief Robert O'Reilly - Watertown | ● Chief James Fallon - Brookline |
| ● Chief Herbert Fothergill - Chelsea | |

Member Communities

Arlington	Everett	Quincy	Wellesley
Belmont	Lexington	Reading	Weston
Boston	Lynn	Revere	Weymouth
Braintree	Malden	Saugus	Winchester
Brookline	Medford	Somerville	Winthrop
Burlington	Melrose	Stoneham	Woburn
Cambridge	Milton	Wakefield	Massport
Chelsea	Needham	Waltham	
Dedham	Newton	Watertown	

METROFIRE
HAZARDOUS MATERIALS INCIDENT
SUPPORT UNIT
PROPOSED INVENTORY & PRICE LIST

TOOL BOX, EQUIPPED, LOCKED:

1 Hacksaw with spare blades*		
1 Awl	DONATED....\$	3.50
1 6' rule	DONATED....\$	12.00
1 Putty knife	DONATED....\$	4.00
1 Pipe cutter	DONATED....\$	70.00
1 Tubing cutter	DONATED....\$	10.00
1 Ball peen hammer*		
2 Adjustable wrenches 20"@ \$ 67.00	DONATED....\$	134.00
2 Adjustable wrenches 20"@ \$ 19.00	DONATED....\$	38.00
1 Pr. Channel Lock Pliers- 13"	DONATED....\$	14.00
1 Rubber Mallet	DONATED....\$	4.00
1 Pr. Aviation Cutting Snips	DONATED....\$	12.00
1 Pr. Pliers - 8"	DONATED....\$	6.00
2 Pipe Wrenches 14" @ \$ 15.00	DONATED....\$	30.00
2 Pipe Wrenches 24" @ \$ 35.00	DONATED....\$	70.00
1 Vice Grips 10" -, Curved jaws	DONATED....\$	8.00
1 Vice Grips 7" for crimping - straight jaws	DONATED....\$	7.00
4 Assort. Screw Drivers - straight tip *		
4 " " " Phillips " *		
1 14-piece combination open end & box wrench set, in case-1/4"-1*		
2 "C" clamps- fixed for pipe clamps 4" -@ \$ 11.00	DONATED...\$	22.00
1 Scissors - 10"	DONATED...\$	14.00
1 10" Tape Measure	DONATED...\$	6.50

TOOL BOX - con't

1 Socket Wrench set with 3/1" drive:sockets & extensions
in case*

1 " " " " 2/1" " " " *

1 Vice Clamp tool	DONATED....\$	12.00
2 Shovels, small plastic @ \$ 2.00	DONATED....\$	4.00
1 Wiring & Crimping Tool	DONATED....\$	13.00
1 Tool Box	DONATED....\$	28.60
* Included in Package Tool Set	DONATED....\$	<u>249.00</u>
TOTAL - TOOL BOX EQUIPPED		\$ 771.60

NON-SPARKING TOOLS, IN BOX, LOCKED

Ball Peen Hammer, 1 lb. 8 oz	\$ 41.30
Engineers Hammer, 3 lb. 3 oz	\$ 57.75
Mallet, 4 lb. 2 oz	\$ 95.90
Pliers- grove joint	\$ 81.20
Slotted Screw Drivers- 2"blade, ½" tip	\$ 6.30
6" " 5/16" "	\$ 12.95
8" " 3/8" "	\$ 22.40
Phillips Screw Driver- 4" blade type 2	\$ 8.05
Scoop Shovel	\$145.60
Round Point Shovel	\$123.90
Square Point Shovel	\$132.65
Adjustable Wrenches 8"	\$ 83.65
12"	\$122.15
Bung Wrench	DONATED....\$ 38.00
Pipe Wrench - 14"	\$193.90
24"	\$306.60
Tool Box	28.60
TOTAL - NON SPARKING TOOLS & BOX	\$1,500.90

MISC. TOOLS, NOT IN CASE:

3 50' sections garden hose @ \$ 39.00	DONATED	\$ 117.00
1 Pr. Field Glasses in case: 7 x 50	DONATED	\$ 100.00
1 "Come-Along"	DONATED	\$ 45.00
1 Chlorine "A" Kit(for 100 & 150 lb. cyl.)		\$ 760.00*
1 Chlorine "B" Kit (for 1 ton container)		\$ 897.00*
1 Chlorine "C" Kit (for tank cars & trucks)		\$ 892.00*
1 20 lb. Purple-K extinguisher Class BC	DONATED	\$ 200.00
1 50 lb. Met-L-X Class D extinguishing agent ..	DONATED	\$ 35.50
Maxiforce System Leak Sealing bags & acces		\$ 1,735.00
5 Dome Cover Clamps @ \$ 10.00	DONATED	\$ 50.00
* Shipping for 3 Chlorine Kits		\$ 100.00
TOTAL - MISC. TOOLS & APPLIANCES		\$ 4,931.50

TECHNICAL REFERENCES, IN CASE:

<u>The Condensed Chemical Dictionary</u>	10th Ed. rev. by Gessner G. Hawley Pub. by Van Norstrand Reinhold Co., \$42.50 est DONATED
<u>Dangerous Properties of Industrial Materials</u>	N. Irving Sax, 5th Rd. Van Norstrand Reinhold, 1979 \$57.50 est DONATED
<u>Farm Chemical Handbook</u>	Published annually by: Meiser Publishing Co. 37841 Euclid Ave. Willoughby, Ohio 44094 Tel. (216) 942-2000 \$20.00 est DONATED
<u>CHRIS - Hazardous Chemical Data</u>	DOT - U.S. Coast Guard Washington, D.C. 20590 \$50.00 DONATED
<u>Emergency Handling of Hazardous Materials in Surface Transportation</u>	Bureau of Explosives Association of American Railroads 1920 L Street, N.W. Washington, D.C. \$12.50 DONATED
<u>Fire Protection Guide on Hazardous Materials</u>	National Fire Protection Association Batterymarch Park Quincy, MA 02269 \$15.50 DONATED
TOTAL - REFERENCES	\$198.00

DRUM KIT - for damaged or leaking 5-,30-,55-gal.drum:

Recovery or overpack drums	DONATED.....\$	110.00
Combination of square, conical, wedge-shaped wooden plugs	DONATED ..\$	10.00
Small hand ax to shape above	DONATED.....\$	14.00
Felt and lead wool to wrap around plug(s) inserted in opening		10.00
Small saw to cut plug for patching	DONATED.....\$	10.00
Rubber inner tube to place over crack in drum to form twist seal		N/C
	DONATED	
6 Cans epoxy putty to seal plug @ % 5.00	\$	30.00
Sling to raise drum for overpack	DONATED.....\$	50.00
Drum truck or dolly	DONATED.....\$	170.65
1 Bung wrench	DONATED.....\$	25.10
3 3/4" bungs for drums	DONATED.....	N/C
3 2" " " "	DONATED.....	N/C
TOTAL - DRUM KIT	\$	429.75

PLUG AND CLAMP KIT:

(In addition to tools carried in kit)

Plumbers test plug for leaks, 4 sizes: 1¼" - 3"	DONATED	\$	58.00
Vetters System plugs for leaks, 3 sizes & foot pump		\$	1,465.00
Plumbers Pipe Clamps for leaks, 4 sizes: 1 ½" - 4"		\$	21.00
	DONATED		
TOTAL - PLUG AND CLAMP KIT		\$	1,544.00

ABSORBANTS, DIKING MATERIALS:

Sodium Bicarbonate - 5 x 100 lb. bags @ \$ 22.60 ...	DONATED.....\$	113.00
Plug n Dike - 100 lbs	DONATED.....\$	75.00
Hazorb Absorbant Pillows - 2 bales of 24 @ \$ 137/bale	DONATED.\$	274.00
2 caps & Plugs for 2 ½" Hose to Make Booms or Dikes from hose	DONATED	N/C
TOTAL -ABSORBANTS, DIKING MATERIALS	\$	462.00

DETECTION DEVICES:

Lower Explosive Limit/Oxygen Deficiency Detector	\$ 1,400.00
Toxic Gas Indicator Tube Kit	DONATED.\$ 300.00
Sets of Tubes for 10 Common Gases	DONATED.\$ 248.00
PH Indicating Paper	DONATED.\$ 5.00
Radiation Survey Meter	DONATED.\$ N/C
Sampling Jars	DONATED.\$ N/C
Leak Detection Solution - Low Temperature	DONATED.\$ 10.00
Normal "	\$ 10.00
<hr/>	
TOTAL - DETECTION DEVICES	\$ 1,973.00

PROTECTIVE CLOTHING & EQUIPMENT

4 Andover Butyl rubber Chemical Suits per Metrofire spec.	@ \$ 850	1 DONATED	\$	3,400.00
10 Disposal Spash Suits.....	6.DONATED.....	10 for..	\$	76.50
10 Hardhats with attached face shields @\$ 17.85			\$	178.50
25 Pair Ear Plugs @\$ 0.30			\$	7.50
10 Non-foggy safety goggles @\$ 3.55 ..	6..DONATED.....		\$	35.50
Gloves - 4 types for various materials:				
12 pairs Neoprene.....		12 for..	\$	102.45
12 " Nitrile.....		12 for..	\$	96.20
12 " Latex Rubber.....		12 for..	\$	48.80
12 " Non-absorbant Work.....		12 for..	\$	47.55
4 Pairs Firefighters night boots @ \$ 39.25.....			\$	157.00
4 Scott 4.5 1 hour masks @\$ 1,200			\$	4,800.00
4 Spare 4.5 1 hour tanks @\$ 450.00			\$	1,800.00
4 Scott Pressure Regulators to pressurize Suits @\$ 156.50\$				626.00
8 50' Scott Air Hoses	"	"	@ \$ 208.00\$	<u>1,664.00</u>
TOTAL - PROTECTIVE CLOTHING & EQUIPMENT			\$	13,040.00

RADIO EQUIPMENT

4 Portable 2 Channel Radios with Bone Mike, Earpiece & Body Switch - for use with suits @ \$ 1,500.....	\$ 6,000.00
1 Portable 2 Channel Radio (Incident Commander)	\$ 1,150.00
1 Mobile 2 Channel Radio for VehicleDONATED..	\$ <u>2,200.00</u>
TOTAL - RADIO EQUIPMENT	\$ 9,350.00

TOTAL PRICES:

Tool Box - Equipped	P 60,61	\$ 771.60
Non Sparking Tools & Box	P 62	\$1,500.90
Misc. Tools	P 63	\$4,931.50
References	P 64	\$ 198.00
Drum Kit	P 65	\$ 429.75
Plug & Clamp Kit	P 66	\$1,544.00
Absorbants & Diving Materials	P 67	\$ 462.00
Detection Devices	P 68	\$1,973.00
Protective Clothing & Equipment	P 69	\$13,040.00
Radio Equipment	P 70	\$9,350.00

TOTAL \$34,200.75

BY-LAWS OF
MID STATE FIRE MUTUAL AID ASSOCIATION

ARTICLE 1 - NAME

- Sec. 1: This organization shall be known as Mid-State Fire Mutual Aid Association.
- Sec. 2: The purpose of this association is to promote cooperation and assistance between fire departments in the preservation of life and property within the district which it comprises.

ARTICLE 2 - OBJECT

- Sec. 1: The object of this association shall be to provide better and more efficient cooperation between the various fire departments in the protection of life and property, cut and stacked lumber to be considered under the heading of the latter, in any and all compact areas of any town, city or district within the bounds set up or in any other instance where the services are deemed necessary. Any equipment in excess of demand, shall be released to return to its home station.

ARTICLE 3 - MEMBERSHIP

- Sec. 1: This association shall be comprised of the fire departments in the various municipalities and fire districts within the bounds originally set up.
- Sec. 2: This association comprises municipalities and districts in Worcester and Middlesex Counties.
- Sec. 3: Additional departments may be added to this association upon application from said department to the Board of Directors and the approval made of the same by said Directors.
- Sec. 4: Each department shall be entitled to one vote in the association.

ARTICLE 4 - DUES

- Sec. 1: Membership fee to be charged for the ensuing year shall be set annually by the Board of Directors.

ARTICLE 5 - OFFICERS

- Sec. 1: The officers shall consist of a president, first vice-president, second vice president, secretary-treasurer elected at the annual meeting.
- Sec. 2: There shall be a Board of Directors consisting of the officers and five directors.

- Sec. 3: The Board of Directors to be geographically located so that all sections of the District shall have representation.
- Sec. 4: The Board of Directors shall be elected at the Annual Meeting; one for five years, one for four years, one for three years, one for two years and one for one year and one member for a five year term each year thereafter.
- Sec. 5: Special or standing committees shall be appointed by the president at the request of the association.
- Sec. 6: There shall be an Auditing Committee of two appointed annually by the president.
- Sec. 7: There shall be a Nominating Committee of three appointed annually by the president.

ARTICLE 6 - OFFICER'S DUTIES

- Sec. 1: It shall be the duty of the president to preside at all meetings, call special meetings or any meetings requested by at least seven members.
- Sec. 2: It shall be the duty of the vice-presidents to act in the absence of the president.
- Sec. 3: It shall be the duty of the secretary-treasurer to keep a record of all meetings and make a report thereof and receive all monies.
- Sec. 4: It shall be the duty of the secretary-treasurer to keep a record of all monies received and all monies expended. Money to be expended only upon the approval of the president or vote of the association.
- Sec. 5: It shall be the duty of the Board of Directors to meet at the call of the president and act on all matters pertaining to the association and make a report of their action to the members of the association at the Annual Meeting.
- Sec. 6: It shall be the duty of the Auditing Committee to audit the books of the secretary-treasurer just prior to the Annual Meeting and report their finding at the Annual Meeting of the association.
- Sec. 7: It shall be the duty of the Nominating Committee to prepare a slate of officers for the ensuing year to be acted upon at the Annual Meeting.

ARTICLE 7 - MEETINGS

- Sec. 1: The Annual Meetings of the association shall be held on the first Thursday in April, the time and place to be picked by the president and secretary-treasurer.

Sec. 2: All meetings shall be called by the president and secretary-treasurer.

ARTICLE 8 - QUORUM

Sec. 1: Fifteen members shall constitute a quorum to conduct business.

Sec. 2: At all meetings of the Board of Directors, five members shall constitute a quorum.

ARTICLE 9 - ORDER OF BUSINESS

Message of welcome by president
Roll call by secretary-treasurer
Introduction of guests
Report of secretary
Report of treasurer
Old Business
Report of Nominating Committee
Election of officers and one director
New Business
Report of Special Committees
Good and welfare of the association
Adjournment

ARTICLE 10 - DEPARTMENT DUTIES

Sec. 1: It shall be the duty of the department when called by the Dispatch Center to render the aid requested by the Dispatch Center to the municipality which has requested the aid, according to the agreements signed and on file with the secretary-treasurer. However, if and when any fire extends to the woodlands, said fire shall be considered out of the jurisdiction of the original agreements and the extinguishment of same shall depend on any and all agreements so decided upon by the participating towns, cities or districts and such agreements shall be considered as outside and separate from said original agreements.

ARTICLE 11 - AMENDMENTS AND ADDITIONS

Sec. 1: Amendments or additions or corrections of these By-Laws may be made at any regular or special meeting provided notice of the same shall have been given at least fourteen (14) days preceding the meeting.

MID-STATE FIRE MUTUAL AID ASSOCIATION

Operating Rules

Definitions:

"Neighboring cities and towns" - cities and towns having a common boundary and belonging to the Mid-State Fire Mutual Aid Association.

"For a maximum of 5 hours" - the first 5 hours of the first company or companies responding from the town or towns furnishing aid.

"Suppressions" - to include all phases of control, patrol and mop up.

Part 1

1. It shall be the duty of the member fire department when called upon by the Dispatch Center, to render the aid requested by the Dispatch Center to the municipality which has requested the aid.
2. A member fire department requesting aid shall have the option of requesting aid from any city or town they may choose. These requests may be made direct or through the Dispatch Center. It shall be the responsibility of the member fire department responding to notify the Dispatch Center.
3. It shall be the responsibility of member fire departments to notify the Dispatch Center when they are "Out of Service". Member fire departments shall also notify the Dispatch Center when they are "Back in Service".
4. When member fire departments report their departments "Out of Service", they shall state if it is because of a local fire, break-down or other cause. They shall further state if "stand-by" coverage is desired.
5. It shall be the responsibility of member fire departments to notify the Dispatch Center when equipment returns to the home station after being on a Mutual Aid assignment.
6. A member fire department answering a call to aid a non-member municipality shall notify the Dispatch Center of its destination.
7. Any equipment in excess of demand at a Mutual Aid call shall be released to return to its home station.
8. The apparatus of non-member cities, towns or districts shall not be listed on the running cards, but this will not alter any agreements between a member and a non-member city, town or district or other Mutual Aid association.

9. For stand-by duty, a member fire department of this Association shall, upon request, furnish for a period of not over five (5) hours, a piece of apparatus with a crew to man the same. This rule shall not apply during a State of Emergency declared by the Governor.

10. It shall be the responsibility of member fire departments to advise the Dispatch Center immediately, if charges are to be made for assistance they may render.

This rule shall not apply during a State of Emergency declared by the Governor.

11. When requests for aid have been made, arrangements shall be made by the requesting fire department to furnish a guide familiar with his own area to meet the incoming equipment and to stay with it during its stand-by period or if going to the fire, to guide such equipment to the fire scene.

12. It shall be the responsibility of member fire departments to advise the Dispatch Center of the following:

- A. Changes in inventories as they may occur.
- B. When apparatus listed as on call for Mutual Aid is unavailable due to repairs, overhauls, breakdown, etc.
- C. Changes in telephone numbers or any other information which is pertinent to the efficient operation of the association.

13. The Mid-State Fire Mutual Aid Association will have no voice, or assume any liability, as to whether cities, towns or districts will be charged or charge for services rendered.

14. All member fire departments receiving aid shall supply reasonable quantities of food, drinking water or other beverages to member fire departments assisting after a reasonable period of time.

MID-STATE FIRE MUTUAL AID ASSOCIATION

Operating Rules of Forest Fire Agreements

Part 2

As stated in the By-Laws of the Mid-State Fire Mutual Aid Association under Article 10, Department Duties, Section 1, when any fire extends to the woodlands, said fire shall be considered out of the jurisdiction of the original agreement. Fire those cities or towns who have on file with the Secretary-Treasurer of this Association, a second agreement covering mutual aid for forest fire suppression and which agreement has been signed by the governing official (s) of that city or town, the following Operating Rules shall apply:

1. All of the Operating Rules under Part 1 shall apply to mutual aid for forest fire suppression.

2. Member fire departments shall assist neighboring cities and towns without cost, for a maximum period of five (5) hours unless other arrangements between the neighboring cities or towns have been made previously.

3. The Forest Warden of neighboring cities or towns assisting shall furnish the Forest Warden of the city or town receiving aid a list of names of firefighter personnel for the first five (5) hours.

4. Member fire departments shall assist other than neighboring cities or towns within the Association in the suppression of forest fires providing the city or town receiving aid shall pay the established rate of pay of the city or town furnishing aid.

5. If there is no established rate of pay which within the city or town furnishing aid, the firefighters furnishing aid shall be paid at the rate of the firefighters of the city or town receiving aid.

6. The Forest Warden of the city or town furnishing aid, shall within 14 days, furnish the Forest Warden of the city or town receiving aid, the following typewritten information:

A. Full name and mailing address of each firefighter listed on the payroll.

B. Social security number and zip code.

C. Date and number of hours worked each day.

D. Rate per hour.

E. Total amount of pay due each man.

F. Payroll total.

G. All other expenditures such as gas, oil, food, repairs on equipment or replacements shall be itemized on a separate sheet.

7. These rules under Part 2 shall not apply during a State of Emergency declared by the Governor.

